

Management Templates for Increased Biodiversity and Economics in Intensively Managed Southern Pine Plantations

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Historically, fire-maintained stands of longleaf pine were prevalent throughout the southern U.S. The open, park-like structure of these stands allowed for the development of a rich, herbaceous understory that supported high levels of biodiversity. In contrast, forests in the region today are characterized by dense, intensively managed plantations of fast-growing loblolly pine. There have been concerns about the level of biodiversity supported by these plantations, and there is increasing interest in management approaches that will better incorporate biodiversity values. There are a number of management practices that can increase the likelihood of increased biodiversity, including thinning, prescribed burning, and longer rotations. However, these practices often have economic trade-offs which must be considered in order for private landowners to remain economically competitive. Ultimately, management strategies are needed that balance biodiversity and economic objectives. We have developed a framework for creating management “templates” that can serve model management strategies for achieving both biodiversity and economic objectives in southern pine plantations. This framework identifies existing stands that have structural conditions associated with biodiversity. Inventory data from these stands are then used to establish target parameters for key structure attributes such as density, size, and canopy layers. Potential management strategies can be modeled over time and assessed relative to the target structure parameters for biodiversity as well as economic return. Management strategies that achieve desirable outcomes relative to both criteria can then be used as management templates. To demonstrate this framework, we have created some example template options for southern pine plantations that significantly improve the structural characteristics desirable for biodiversity while minimizing economic trade-offs. This template approach shows promise for helping private landowners in the South and other regions to manage forest plantations for multiple objectives.